Then and Now Roadside Audio Tour Transcripts
Delve into Lassen Volcanic's 100-year history with this roadside audio tour. This file includes audio file transcripts for 16 stops that correspond with numbered markers along the park's 30-mile highway.

Stop 0. Introduction
Welcome to Lassen Volcanic National Park's *Then and Now Roadside Audio Tour*. 2016 marks the 100th anniversary of both Lassen Volcanic National Park and the National Park Service. This narrated auto tour celebrates the rich history and present day highlights of the park. Take the tour by selecting the numbered audio file as you reach the corresponding road marker posted along the park highway. Please stop only in pullouts, turn off your engine to protect Lassen's clean air, and drive safely by observing the posted speed limits. My name is Dave Schlom and I will be your guide on this 30-mile adventure. This audio tour was produced with support from park staff, volunteers like me, and Northstate Public Radio.

Stop 1. Kohm Yah-mah-nee Visitor Center
While our visitor center area is a great place to start your summer exploration of Lassen Park, it is in winter that this place is truly magical. Skiing and snowplay go hand in hand with the steep slopes found throughout this area of the park. In the 1930s, snow-enthusiasts came to "ski hike" or ride a rope tow at Sulphur Works. When the 1960 Winter Olympics were held in nearby Squaw Valley, winter visitation soared here. Shortly after, a two-story, A-frame chalet was built near the site of the visitor center. It provided an expansive view of the ski area above. Things began simply with two rope tows and a simple ski lift. Eventually, a two-person chairlift aptly named "Bumpass Heaven" carried skiers to the top of the run. Lassen Ski Area became a beloved place where people young and old learned to ski. Impacted by the opening of the nearby ski resorts and multiple seasons of poor snowfall, the ski area closed in 1994. But in 2008, the Kohm Yah-mah-nee Visitor center opened at the historic site. It was constructed in part with materials from the old ski chalet.

The green certified, state of the art building features sustainable natural daylight illumination and groundwater cooling. The visitor center complements the return to human powered recreation and is an example of the climate-friendly stewardship that may help ensure a long future of winter recreation at Lassen. Come in winter for a ranger guided snowshoe trek or ski the magnificent backcountry powder mantling the surrounding volcanic landscape.

Stop 2. The Sulphur Works
Smell like rotten eggs? That's the aroma of a volcano. The source is hydrogen sulfide gas, a pungent indicator that you are in an active volcanic center. About six miles below you, magma heats rock that heats the water to temperatures far above the boiling point. The super-heated water rises through the rock and turns to steam, escaping at the surface in hydrothermal areas throughout the park. In fact, Lassen has the most extensive hydrothermal system west of Yellowstone. The hot, acidic water here is dangerous for humans, but some forms of life flourish in these harsh conditions. Microorganisms called extremeophiles thrive in the bubbling pools. Scientists from NASA study and monitor these organisms. The resilient microbes might resemble the first life on Earth or microbial life yet to be discovered on Mars or other worlds. For your safety, be sure to stay on the sidewalks. Scalding steam and acidic water lurk inches below what looks like solid ground. One misstep could result in severe injury.

Stop 3. Diamond Peak Pullout
Despite its rich title Diamond Peak is named for quartz crystals found in cavities of the lava here, not actual diamonds. Reaching a height of 7,968 feet, this peak is the weathered core of Brokeoff Volcano - a composite cone that once stood here.Similar to Oregon's Mount Hood, Brokeoff once reached 11,500 feet tall—around 1,000 feet higher than Lassen Peak. To the south, Mount Conard marks the eastern flank of this once great volcano.When Brokeoff Volcano stopped erupting some 400,000 years ago, the acidic water of the hydrothermal areas and glacial ice began to slowly carve away the mountain, leaving only remnant peaks like Mt. Brokeoff, Diller, Pilot Pinnacle, Mount Conard, and Diamond Peak.

Diamond Peak survives because the lava that it's made up of is harder than the surrounding rock and less susceptible to the incessant workings of ice, water, gravity and weather. Today the deep canyons and sheer cliffs that have been gouged into this ancient volcano provide perfect habitat for species like the golden eagle, who will perch themselves on the rocky crags as they hunt for prey.

Stop 4. Little Hot Springs Vista
Below you lie the steam vents and hot waters of Little Hot Springs Valley.
Carved deep in the footprint of the eroded Brokeoff Volcano, the verdant gardens along the creek's edge have long been popular with people and wildlife. Prior to the park's establishment, American Indians hunted deer feeding on the abundant grasses and settlers brought their cattle to graze.

Today, black bears and other wildlife congregate along the creek to feast on the first sprouts of spring. As early as April, visitors with binoculars may be able to spot feeding bears from the highway overlooks. Gazing up at the surrounding peaks, you can follow snowmelt as it cascades down their weathered slopes before racing through the colorful chasm. Although no trails enter Little Hot Springs Valley, you can enjoy the cool mist of the rushing creek as it tumbles 70 feet over Mill Creek Falls. The 3.2 mile round-trip trail can be easily accessed from the Kohm Yah-mah-nee Visitor Center.

Stop 5. Emerald Lake
Its proximity to the park highway makes Emerald Lake a popular stop, however there is more to this alpine lake than meets the eye. The lake sits in a glacially carved bowl or cirque, surrounded by fine stands of white fir and John Muir's favorite tree—the mountain hemlock. The shallow waters support the growth of algae that gives Emerald Lake its trademark color. If you look closely you can see the zig-zag tracks of mule deer above the lake or the delicate footprints of the spotted sandpiper along the shore. Not long ago you might also have spotted a Cascade frog, before they were eradicated by an alien predator.

In the 1930s, without understanding the complexity of natural ecosystems, rangers stocked the lake with rainbow trout from state hatcheries. The "outdoor aquarium" was a big hit with visitors who liked to watch and feed the fish. The Cascade frog however, lost its place in the aquarium, unable to survive the onslaught of the nonnative trout predators. Today, guided by ecological principles, parks are engaged in restoring and maintaining natural conditions for native species like the Cascade frog. You can support these efforts by reporting rare wildlife sightings and following the regulations put in place to protect our park.

Stop 6. Bumpass Hell Trailhead Parking Area and Vista
The ever-popular Bumpass Hell area is a dramatic showcase of the power of change. Thousands of years ago, glaciers carved and scoured this area and the changes they wrought on the landscape can be observed today. Look around you. The jagged peaks above, and polished rock slabs at your feet, all bear the marks of the power of ice. Glaciers carved the U-shaped valley below you. And then there is the lonely boulder at the end of the parking area.That big rock makes for a photogenic backdrop to record your visit. It's called a glacial erratic, a boulder that was left in place when the drifting ice melted around it.
More recently, heated rock and water have changed this landscape, forming the park's most popular trail destination—Bumpass Hell. Heated by magma, Bumpass Hell covers 16 acres and is an ever-changing landscape of mudpots, hissing fumaroles, and colorful hot springs. Be sure to stay on the boardwalks, you wouldn't want to wind up like its namesake, Kendall Vanhook Bumpass, who plunged through the crust there and suffered painful injuries to his leg in 1865.

Today, this area and its inhabitants are faced with a new type of change. Rising temperatures are impacting plants and wildlife like the guinea pig-sized pika. This heat intolerant relative of the rabbit thrives in the cool, alpine rock fields in this area and may be forced to seek out a cooler habitat. The pika's high-pitch squeak is

a subtle reminder that we too are impactful. Just as ice erodes, and steam dissolves, our actions can transform the world around us.

Stop 7. Lake Helen
This lake isn't just a gorgeous jewel lying below Lassen Peak, it is also a critical part of northern California's watershed. This location boasts one of the deepest average snowpacks in all of California. Scientists began surveys here in 1930, finding it one of the wettest survey sites in the state. In 1995, surveyors measured a colossal 40 foot snow drift!

The lake, originally named Sapphire Lake, was renamed for Helen Tanner Brodt, who was the first white woman to summit the volcano in 1864. Today, hikers working their way to the summit gauge their progress by the ever shrinking size of the sapphire gem below them. Helen Brodt likely admired the lake for its striking azure blue color. Deep alpine lakes absorb longer wave red light while scattering and reflecting the shorter wave blue light. The deeper the clear water, the bluer it looks. The 110 foot deep waters of Lake Helen are exceptionally clear.

In the winter, Lake Helen is buried in a white mantle of snow. And that snow, slowly melting through summer, helps provide water to a thirsty state. Each year, on April 1, the site is surveyed to help water managers determine the snowpack savings account that will provide water for crops and people. So whether you are walking its lovely pebbled shores here in the park or enjoying a juicy peach down in the valley, Lake Helen is a source of rejuvenation for all of us.

Stop 8. Lassen Peak
Lassen Peak is a monument to the area's natural history and humankind's adventurous spirit. At 10,457 feet high, it's one of the world's largest plug dome volcanoes. Its 1914-1917 eruptions were a driving force behind the establishment of Lassen Volcanic National Park.

The towering peak has been known by many names. Ishi, the last wild Indian in North America called it "Waganupa," the center of the Yahi tribe's universe. The Maidu people called it Kohm Yah-mah-nee, meaning snow mountain. Later, the peak was named for Danish pioneer Peter Lassen who passed through the shadow of the peak and established a route for pioneers on route to the Sacramento Valley.

In 1931, the completion of the park highway and summit trail provided access to new generations of explorers. Over the decades, the footsteps of countless climbers have taken their toll, damaging the erosion-prone slopes of Lassen's south face. In 2015, the park completed a five-year trail restoration project. Today, more than half a million visitors are drawn to the mountain each year. Some wander at its foot and gaze up at Vulcan's Eye—the distinctive plug of hardened lava protruding from its western slope. Others make the 2,000-foot, five-mile round-trip climb to the summit. There, its lava rock-filled craters provide a mute testimony to the violent events of Lassen's awakening a century ago. Although subject to wear from the forces of nature and human use, Lassen Peak continues as a monument to the enduring tradition of adventure and exploration it inspires.

Stop 9. Kings Creek Meadow
Located about halfway along the 30-mile park highway, Kings Creek Meadow affords a dramatic view of Lassen Peak. In 1931, park officials organized a gathering to dedicate the park and celebrate the opening of the park highway. To mark the occasion, then National Park Service Director Horace M. Albright reluctantly consented to allow fireworks on the summit that would simulate an eruption of Lassen Peak. The planned pyrotechnic display ignited both controversy and excitement. In the end, the fireworks proved to be a grand fizzle when winds blew the smoke the wrong way, much to the consternation of the dignitaries and visitors watching from Kings Creek Meadow.

Park stewardship has evolved from those early days. Now, we look to the skies above Lassen Peak for a view of nature on the grandest scale—the awesome beauty of the dark night sky. The open meadow before you provides a front row seat to the universe's dramatic display, no gunpowder required. Here, you can marvel at the eerie glow of a full moon or gaze at the starry cloud arching across the sky. If you live a city, this is a rare chance for you to see the beauty of our home galaxy—the Milky Way. In a world aglow with artificial light, this vast open area is one of few remaining dark sky sanctuaries. Today, we celebrate this precious natural resource at the annual Lassen Dark Sky Festival and every time we look up in wonder at our dark, night sky.

Stop 10. Hat Lake

This scenic open space is called Hat Lake. You may be asking yourself where is the lake? Just a few years ago, this meadow was a beaver pond. Before that it was a rushing creek. Today, this area illustrates the evolution of a landscape under the influence of both humans and nature.

Before the park's establishment, members of the Atsugewi tribe used baskets, nets, and dams to trap fish in Hat Creek. Later, in the early 1900s, an enterprising settler named Joseph Rossi built a flume in this area. He used water from Hat and Lost Creeks to supply a small powerhouse. A few years later, an eruption of Lassen Peak created a massive mudflow. The flash of mud and debris wiped out a significant part of the flume and thwarted future operations. The same mudflow dammed Hat Creek and created Hat Lake. As the decades went by, aspen trees and other plant life returned to the barren landscape.

The new, lush pond formed an ideal habitat for the opportunistic North American beaver. These semi-aquatic rodents built large wooden dams that helped maintain the pond. Recently, they abruptly abandoned their venture for reasons unknown. Today, their absence is evident; without a dam, the pond is now a meadow. With each change, we update our maps to reflect the latest state of this dynamic landscape, but who knows what changes are in store for the next 100 years.

Stop 11. Devastated Area

Your first thought looking around you here might be, "what's so devastated about this?" In the century since Lassen Peak's dramatic eruptions, the conifer forest has reclaimed this area, covering up what was once a barren landscape scoured and blasted by volcanic violence. On the night of May 19, 1915, a dome of black dacite lava broke apart, sending hot boulders into the deep snows of the summit area. The rapidly melting snow formed an avalanche of mud and rock that tumbled down the mountainside, depositing a car-sized boulder on the hill just east of here. A debris flow or lahar followed the avalanche that knocked down the forest, carrying broken trees, rock, and mud for miles.

Three days later, in the morning of May 22, photographer B.F. Loomis and a group of friends came to see the destruction the mudflow had wrought. He photographed a rock that was still hot to the touch and labeled it "hot rock" in his photograph. He ran out of film and decided to leave the area and it is a good thing that he did. At four o'clock that very afternoon Lassen Peak erupted in full fury—blasting a cloud of superheated rock and ash 30,000 feet into the atmosphere. The cloud then collapsed and rolled down the eastern slope of the mountain in the most dangerous type of eruptive activity—a pyroclastic flow. The explosive blast of hot rock, gases and ash scoured the area that the mudflow had previously passed through, snapping huge lodgepole pines like matchsticks and hurling them from their stumps. If you had been here on that fateful afternoon, you most certainly wouldn't have survived.

For hours after the eruption, pumice and ash rained down upon this area. Look at the greyish sand-like ground in the parking area—that's the pumice that fell from the sky on that dramatic day. All of the rock in this area was formed or deposited during the eruptions. But be sure to leave all things where you find them, so that future generations can study the evidence of Lassen's historic eruptions. From the parking area, an easy, short interpretive trail passes by huge blocks of dacite lava, including the rock in the Loomis photograph.

Stop 12. Hot Rock
One of the most dramatic examples of the tremendous power of the mudflow of May 19, 1915 is the huge dacite boulder on the west side of the park highway here. This is a 300-ton block of lava that erupted from Lassen Peak and came cascading down the mountain amidst trees, rock, and meltwater from the snows of Lassen's east flank. The rock ended up here, five miles from the summit crater. When B.F. Loomis first saw the rock on the morning of May 22, it was still sizzling amidst the muddy water that surrounded it and became known as one of the "hot rocks" that are scattered throughout the forest here.

On the east side of the highway, another kind of violent energy swept through this area during the Reading Fire in July, 2012. Ignited by lightning strikes, the fire affected 17,000 acres of the park and created a mosaic of burned and unburned areas. Just as the forest returned to Lassen's barren slopes following its eruptions, plants and wildlife thrive in the open forest cleared by the fire. Fire is a natural part of ecosystems, but our changing climate is leading to more frequent and destructive fire events. Lessons learned from the Reading Fire will help us to better manage fire throughout our forests.

Stop 13. Nobles Emigrant Trail
The Nobles Emigrant Trail was forged by wagon wheels of courageous pioneers and gold seekers. Nature has since narrowed the track to a humble hiking trail. In 1851, William H. Nobles chanced upon a route across the northern portion of the park. It offered abundant water and grazing areas. Thousands of daring souls traveled the trail, trading the comforts of home for a path plagued by hardship. In search of a better life out west, they learned survival, experienced loss, and learned to live off the land when supplies ran out. Today's adventurous visitors can channel their own pioneer spirit by exploring Lassen's vast wilderness areas. Over ¾ of the park retains its primitive character as designated wilderness. These wild spaces offer an opportunity for current-day explorers to take a break from modern conveniences and experience the challenges and joys of life on the trail.

Stop 14. Chaos Crags Vista
The stark domes of jagged rock before you are the aptly named Chaos Crags. These are lava domes, like Lassen Peak, and are some of the youngest volcanoes in this part of the park. Imagine being here 1,100 years ago and watching them slowly rise out of the ground. It would be an awesome sight as pasty lava oozed upward, accompanied by explosions of steam. The massive eruptions formed six lava domes which sat quietly steaming for centuries. Then, 700 years ago, one of the domes collapsed creating a violent high-speed rock avalanche that raced across what is now the park highway and part way up Table Mountain to your north. The rockfall dammed Manzanita Creek, forming Manzanita Lake. Since then, a dwarf forest has grown over the waves of broken rock. Their stunted size is a testimony to their resilience as they slowly reclaim the Chaos Jumbles.

This jumbled landscape is evidence of the unstable nature of lava domes. In the 1970s, two scientists became concerned about the potential for future landslides in the Manzanita Lake area. To ensure visitor safety, the park closed its Manzanita Lake facilities. In the following decades, additional research helped scientists determine that while rockfall hazards were possible, it was unlikely that a future avalanche would reach the developed area.

Scientists have been monitoring this area since the dramatic eruption of Lassen Peak in 1915. You can see the first seismic station in the stone building adjacent to the Loomis Museum. Today, staff at the Cascade Volcano Observatory watch for indicators of increased volcanic activity. Stop by the Loomis Museum or go online to view a real-time map of seismicity in the park. Scientists in Menlo Park, California are using the same information to monitor the earthquakes that continuously rock this region and remind us that this is indeed a restless land.

Stop 15. Reflection Lake

Reflection Lake has long been a popular destination for visitors who enjoy pondering nature's beauty. The lake is named for the lovely reflected images of Lassen Peak and Chaos Crags visible from the opposite shore. Formed by a rockslide from Chaos Crags three centuries ago, this depression was previously known as Mud Lake. In the late 1800s, settlers diverted part of Manzanita Creek, making the lake just slightly less shallow. Today, the lake is slowly shrinking. Its sandy shores expand with small particles of volcanic rock carried by water from nearby Lassen Peak. Trees and shrubs further the effect, pushing in on the lakeshore and filling the bottom with decaying plant life. Eventually, the lake will become a meadow. Until then, this aquatic habitat is ideal for wildflowers, water insects, and the birds that feed on them. Take a stroll on the one-mile path that circles the lake. Listen for the rattle-like call of the belted kingfisher or the gentle hum of buzzing dragonflies. Much as its name implies, Reflection Lake is a lovely spot to enjoy the sights, sounds, and serenity of nature.

Stop 16. Lassen Crossroads

An open-air pavilion to the east highlights the diverse features of the Lassen region, comprised of Lassen Volcanic National Park and Lassen National Forest. Although managed by two separate federal agencies serving different missions, this region provides a wide variety of opportunities for discovery and recreation. In Lassen National Forest, you can wander through a lava tube at Subway Cave and cast a line in some of northern California's finest trout waters. You can also visit the Hat Creek Radio Observatory, where astronomers use radio telescopes to study the heavens and even search for intelligent life beyond earth. Within the park, visitors can experience the sulfurous smell of one of seven bubbling hydrothermal areas, climb to the summit of iconic Lassen Peak, or birdwatch at one of the park's numerous meadows or lakes. You can learn more about the recreational opportunities as well as the history and natural features of the Lassen region through the panels in the Crossroads Information Pavilion.